Email: cewwm@bwssb.gov.in

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ಬೆಂಗಳೂರು ನೀರು ಸರಬರಾಜು ಮತ್ತು ಒಳಚರಂಡಿ ಮಂಡಳಿ

BANGALORE WATER SUPPLY & SEWERAGE BOARD

O/o Chief Engineer(WWM-East), 5th Floor, Cauvery Bhavan, Bangalore-560009.

No. BWSSB/ CE(WWM-E)/ DCE(WWM- E&W)/TA-1/252 /2025–26 Date : 22/05/25

ADDENDUM -1

Sub: 1. Work of supply installation and commissioning of Ultra Filtration System taken up under Jal Hi Amrut Scheme at 35 MLD Agara STP coming under EE(WWM-STP-K&T) division.

Ref: 1. IFT No. BWSSB/CE(WWM-E)/ACE(WWM-N-E)/DCE(WWM-E&W)/ TA-1/151/ 2025-26 Dt: 08-05-2025.

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With reference to the above subject, invitation for this tender was invited vide IFT mentioned in reference letter this Addendum indicates the details of response to the pre bid queries.

Chief Engineer(WWM-E)
BWSSB

Encl: Replies Pre bid Queries

Client				BANGALORE WATER SUPPLY AND SEWERAGE BOARD			
Project				**Design, Supply Installation and Commissioning of Ultra Filtration System taken up under Jal Hi Amrut scheme at 35 MLD Agara STP coming under EE(WWM-STP) K&T Division (TURNKEY CONTRACT)**			
SL. No	**Part**	**Section**	**Clause No**	**Pg No**	**Subject**	**Clarification Required**	**Response**
1		Vol 1, Sec 01	3.1.2	7 & 11	Particular Construction Experience	It is mensioned "As a Prime Contractor, the tenderer should have satisfactorily completed at least one similar nature of Sewage Treatment plant/Tertiary Treatment Plant with Ultra filteration /Membrane Bio Reactor/Nano Filteration of value not less than Rs.239.71 lakhs." at page no. But the particular construction experience is not mentioned Please Clarify	Pre Qualification criteria page No.07 will prevails
Technical Queries							
2	5	Vol 2 Section 7	5.9	6	Peak factor - 2.25	As per our understanding, the Ultrafilteration (UF) and UV systems are to be designed for a flow of 2.5 MLD. We understand that the peak factor of 2.25 is not applicable to the design of the UF and UV systems. Kindly confirm whether this understanding is correct.	Confirmed
3	5	Vol 2 Section 7	5.9	8	No.of UF Stream 2	For the design flow of 2.5 MLD, it appears that a single working UF stream would be sufficient. Kindly clarify whether we need to consider: One working and one standby UF stream, or Two working UF streams of 1.25 MLD capacity each.	Two working UF streams of 1.25MLD Capacity each
4	5	Vol 2 Section 7	5.9	9	Minimum Operating life of membrane 10 yrs	As per the tender specifications, the minimum operating life of the UF membrane is mentioned as 10 years. We would like to highlight that, based on industry standards and manufacturer specifications, the typical operating life of UF membranes ranges between 2 to 5 years, depending on feed water quality, operating conditions, and maintenance practices. Request you to kindly review and revise this requirement to a more practical and technically feasible lifespan, in line with standard industry practice and OEM recommendations.	5 years

5	5	Vol 2 Section 7	5.9	10	Type of UV System Open Channel/Pipe	We request your kind consideration only for specifying open channel UV disinfection systems in the tender, instead of pipe-type UV systems, for the following technical reasons: **Proven Suitability for Wastewater Applications:** Open channel UV systems are widely used and well-established in municipal and industrial wastewater treatment plants, particularly for tertiary treated effluent. **Ease of Operation and Maintenance:** These systems provide easy access for lamp replacement, sleeve cleaning, and general maintenance, without requiring shutdown or disassembly of pipelines. **Energy Efficiency:** Operating under gravity flow, open channel UV systems avoid the need for additional pumping and reduce energy consumption associated with head loss. **Lower Lifecycle Costs:** Due to simpler installation, lower operational costs, and reduced maintenance complexity, open channel UV systems offer a cost-effective disinfection solution. In light of the above advantages, we request that the tender consider specifying open channel UV systems for the disinfection process.	Open Channel

Addl. Chief Engineer
(WWM-STP-East)
BWSSB

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Sr. No.	Tender Reference	As per Tender Specifications			Queries/Clarification	Bwssb Reply
6	SECTION 1: INVITATION FOR TENDERS (IFT) Page 7	Operating Hours for Reuse Facilities			The technology proposed for tertiary treatment is ultrafiltration process. Ultrafiltration system is the most critical aspect of the tertiary treatment plant as the system guarantee is dependent upon the UF design and membrane technology . Hence, it shall be mandatory to tie-up with membrane supplier as per the following experience criteria :- "Bidder must tie-up with the ultra-filtration membrane supplier or its authorized distributor for Ultrafiltration Technology and shall submit Technology Tie-up Agreement as a part of their technical bid. The membrane supplier or its authorized distributor shall have experience of providing proposed ultrafiltration system for at least One (1) TTP of min. 2.5 MLD capacity (Net output) in India for any State/Central Government organizations /ULB's which is working satisfactorily for at least two years as on date of calling of tender. Performance Certificate for work should be issued by the end user, duly certified by officer not below the rank of Executive Engineer should be enclosed." Kindly confirm.	Tender condition prevails
7	Design / Sizing Criteria Part 5-7	Item/Parameter/Description	Units	Agara STP	We Assume that Capacity of Ultrafiltration System means flow at outlet of Ultrafiltration Plant (Permeate Flow). Please confirm.	Confirmed
		Capacity of Ultrafiltration and UVsystem	MLD	2.5		
8	Design / Sizing Criteria Part 5-7	Item/Parameter/Description	Units	Agara STP	The tender specifies peak factor pf 2.25. We assume that the same is not applicable for UF and UV systems and they will be designed for average / constant flow.	Confirmed
		Capacity of Ultrafiltration	MLD	2.5		
		Peak Factor		2.5		
9	Design / Sizing Criteria Part 5-8	Operating Hours for Reuse Facilities			The tender does-not mention about operating hours for Tertiary Treatment Plant. In the recently published tenders of BWSSB for tertiary treatment for Bommanahalli Zone, Mahadevapura Zone, Byatarayanapura Zone , Operating Hours for Reuse Facilities has been mentioned as 20 hours. Kindly confirm the operating hours for this tender also.	Tender condition prevails

10	Design / Sizing Criteria Part 5-8	Item/Parameter/Description	Units	Agara STP	Tender allows both pressurised / submerged ultrafiltration systems. In Submerged ultrafiltration systems; the membrane modules are immersed in tanks or cells. Hence we assume that Streams mentioned in the specified clause shall refer to "cells or tanks" for Submerged ultrafiltration systems. Please confirm.	Tender condition prevails
		No of UF Streams	Nos	2		
11	Design / Sizing Criteria Part 5-9	Technical Particular	Parameters		Ultrafiltration Porosity ranges from 0.01 to 0.07 microns with most of the industry adopting for 0.04 microns as the nominal size. Therefore, we request you to allow 0.04 microns nominal pore size for UF membrane .	Tender condition prevails
		Nominal Pore Size	micron	0.03 microns (maximum)		
12	Design / Sizing Criteria Part 5-8 & 8.18Ultra Filtration System (Submerged/ Pressurized) Part 8-77	Technical Particular	Parameters		PVDF Braided UF membrane is not required for submerged ultrafiltration systems that operate on lower pressures than Pressurised UF systems. Hence please allow the bidder to provide more superior monolithic membranes made up of 100 % PVDF for submerged ultrafiltration system that have the following advantages □ More Efficient than braided PVDF membranes as the PVDF layer tends to peel off during operation leading to loss of functionality □ Longer Membrane Life over braided-PVDF membrane □ More Reliable □ Lesser Chemical Consumption as compared to braided PVDF Please confirm.	Tender condition prevails
		Membrane Fiber Chemistry		PVDF (Braided Fiber or HollowFiber (Reinforced)		
13	8.18Ultra Filtration System (Submerged/ Pressurized) Part 8-73	**D. Working Principle of Submerged UF Process:** After mechanical pretreatment, the wastewater is fed to the membrane tanks where the water is separated from the solids by the SUF membranes. The liquid is typically fed below the submerged membrane modules.			We assume that bidder can provide rotary drum screens as mechanical pre-treatment for submerged ultrafiltration process. Please confirm.	Tender condition prevails
14	8.18Ultra Filtration System (Submerged/ Pressurized) Part 8-76	**I. Single Header Design** The SUF product consists of bundles of hollow fiber membranes potted only at the lower end of each bundle. The non-potted ends of the fibers (at the top of the bundle) are individually sealed and move freely in the liquid.			The tender specifies that the submerged ultrafiltration system shall have single header design only. Single header designs are provided for MBR systems due to the presence of fibrous material and high amount of MLSS in MBR tanks. Both of the operating conditions are not present in treated sewage. Hence please allow the bidder to offer submerged ultrafiltration header design as per the UF manufacturer recommendation / design. Please confirm.	Tender condition prevails

<table>
<tr><td>15</td><td>Design /Sizing Criteria</td><td><table><tr><td>Technical Particular</td><td colspan="2">Parameter</td></tr><tr><td colspan="2">Spare Space for module Per train</td><td>10%</td></tr></table></td><td>We understand that for submerged UF system "train" shall refer to "cell/tank" and 10% spare space for module shall be provided per "cell/tank".KindlyConfirm</td><td>Tender condition prevails</td></tr>
<tr><td>16</td><td>Design /Sizing Criteria</td><td><table><tr><td>Technical Particular</td><td>Parameter</td><td></td></tr><tr><td>Minimum operating Time</td><td>Years</td><td>10%</td></tr></table></td><td>The minimum operating life of membranes depends upon various factors, type of system, vendor etc. and typically ranges from 5 years for Pressurised Ultrafiltration system to 7 years for submerged ultrafiltration system
Hence we request you to allow the bidder to provide Minimum Operating Life of Membrane as 7 years.
Please Confirm</td><td>5 years</td></tr>
<tr><td>17</td><td>Ultra Filtratiob System(Submerged/ Pressurised) Part 8-76</td><td><table><tr><td colspan="3">8.28 Approved Vendor / Manufacturer / Make List Mechanical Equipment</td></tr><tr><td colspan="3">Consolidated Mechanical equipment VENDOR List</td></tr><tr><td>S.L No</td><td>ITEM DESCRIPTION</td><td>Approved Vendor Vendor / Manufacturer / Make List Mechanical Equipment</td></tr><tr><td>1</td><td>Ultrafiltration</td><td>M/s Veolia
M/s Hydronectics
M/s Premier Tech</td></tr></table></td><td>We request you allow M/s Dupont in the list of approved makes for Ultrafiltration Vendors. M/s Dupont is one of the reputed vendors for ultrafiltration membranes and their name has been included in the recently published tenders of BWSSB for tertiary treatment for Bommanahalli Zone, Mahadevapura Zone, Byatarayanapura Zone.

Please confirm.</td><td>Tender condition prevails</td></tr>
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